

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### NO DRAWINGS

### Method of Applying Metallic Coatings

WE, COAST METALS, INC., of Little Ferry, State of New Jersey, United States of America; a corporation organized and existing under the laws of the State of Delaware, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates generally to methods of applying metallic coatings, but has reference more particularly to the production of metallic coatings on articles by chemical methods.

According to the present invention a method of forming an alloy coating on a metallic article consists in applying to the article a mixture containing from 40 to 60 parts by weight of aluminium powder, and from 40 to 60 parts by weight of one or more fluorides, selected from the group consisting of nickel fluoride, chromium fluoride, chromium difluoride, chromium trifluoride, and cobalt fluoride, and heating the article to a temperature within the range of from 1950°F. to 2050°F., for a period of from 1/2 hour to 1-1/2 hours to produce a reaction in which a layer of an alloy is formed on the article, said alloy consisting of aluminium and at least one element selected from the group consisting of nickel, chromium and cobalt.

This produces a reaction, as a result of which a layer or coating is formed on the article, consisting when nickel fluoride is used, of an alloy of nickel and aluminium, having a thickness of from about 0.0007 inches up to about 0.0035 inches, which coating is highly resistant to oxidation.

The time or period of heating has some influence on the nature and thickness of the coating formed.

To facilitate application of the aforesaid mixture to the article, the mixture may be formed into a paste, using a binder of an acrylic resin or other suitable binder, which disappears during the reaction, and does not therefore enter into the reaction.

If it is desired that the coating contain some chromium, the mixture can contain, in a desired amount, chromium fluoride, chromium difluoride or chromium trifluoride in addition to, or in substitution for, the nickel fluoride.

If it is desired that the coating contain some cobalt, the mixture can contain, in a desired amount, a cobalt fluoride in addition to, or in substitution for, the nickel fluoride.

In most cases, the adherence of the alloy coating to the article is greatly aided by applying to the article, before the mixture is applied, a plating or thin layer of gold or platinum.

The reactions, in all cases, tend to be exothermic.

It is to be understood that various changes can be made in the method, as described, without departing from the scope of the appended claims.

#### WHAT WE CLAIM IS:

1. A method of forming an alloy coating on a metallic article, which consists in applying to the article a mixture containing from 40 to 60 parts by weight of aluminium powder, and from 60 to 40 parts by weight of one or more fluorides, selected from the group consisting of nickel fluoride, chromium fluoride, chromium difluoride, chromium trifluoride, and cobalt fluoride, and heating the article to a temperature within the range of from 1950° F. to about 2050° F., for a period of from 1/2 hour to 1-1/2 hours to produce a reaction in which a layer of an alloy is formed

on the article, said alloy consisting of aluminum and at least one element selected from the group consisting of nickel, chromium and cobalt.

2. A method of forming an alloy coating 5 on a metallic article, substantially as hereinbefore described.

POTTS & CO.

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